UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/929,708	08/13/2001	Hirohiko Nishiki	SLA 0536	8902

7590 10/30/2003

David C. Ripma
Patent Counsel
Sharp Laboratories of America, Inc.
5750 NW Pacific Rim Boulevard
Camas, WA 98607

EXAMINER	
SEFER, AHMED N	
ART UNIT	**PAPER NUMBER**
2826	

DATE MAILED: 10/30/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/929,708	NISHIKI, HIROHIKO	
	Examiner	Art Unit	
	A. Sefer	2826	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11 September 2003* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-31* is/are pending in the application.

4a) Of the above claim(s) *20-31* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-19* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of Group II (claims 1-19) is acknowledged.

Specification

2. Claims 1, 2, 4, 11, 12 and 14 are objected to because of the following informalities: For consistency, the "first support substrate", "second support substrate" and "first rigid support substrate trenches" recited in the claims should read "first rigid support substrate", "second rigid support" and "first rigid support substrate with trenches" respectively. Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 6, 7, 16 and 17 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The phrase "ambient pressure ..." is not well defined to enable one skilled in the art to make and/or use the invention.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 1-5, 8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ippel et al. US PG-Pub 2002/0031622 in view of Wu et al. USPN 6,545,410 and Izumi et al. USPN 6,104,457.

Ippel et al disclose (see fig. 1 pars. 0003-0005 and bottom portion of par. 0025) a method for mounting a flexible substrate during the fabrication of a liquid crystal display (LCD), the method comprising forming a first rigid support substrate 10 selected from glass or plastic (as in clam 8); forming a first flexible substrate 40 selected from metal or plastic (as in claim 9) overlying the first rigid support substrate; applying adhesive into the first rigid support substrate. But in addition to omitting a rigid support substrate with trench, they do not specifically disclose the method of applying or curing said adhesive into the rigid support substrate.

Wu et al disclose in figs. 6 and 7 a first substrate 32 support substrate 34 overlying a second substrate with trench 54 with adhesive 50 in the second substrate with trenches.

Izumi et al. disclose (see figs. 1-7 and 14 and col. 10, 31-60) injecting adhesive or injecting adhesive in a vacuum environment (as in claim 5) into a substrate and curing said adhesive to attach top and bottom substrates.

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to incorporate the teachings of Wu et al with the device of Ippel et al since that would improve the reliability and quality of the sealing process as taught by Wu et al. It would have been obvious to incorporate the teaching of Izumi et al with the device of the combined references, since that would harden the bonding material as taught by Izumi et al.

As for claim 2, it would have been obvious to detach the first support substrate and adhesive from the first substrate subsequent to additional LCD fabrication process.

As for claim 3, Izumi et al. disclose (see col. 17, lines 45-59) a plurality of patterned circuit films forming TFTs; liquid crystal (LC) layer; and a color filter.

As for claim 4, it would have been obvious to form said second flexible and rigid substrates and injecting and curing said adhesive, since it has been held that mere duplication of the essential working parts of a process involves only routine skill in the art. St. Regis Paper Co. v. Bemis Co., 193 USPQ 8.

6. Claims 6 and 7, as understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over Ippel et al. US in view of Wu et al. USPN and Izumi et al. as applied to claims 1 and 5 above, and further in view of Pai et al. USPN 6,612,888.

The combined references do not specifically disclose trenches with at least one mouth.

Pai et al disclose (see figs. 5-8, col. 2, lines 63-67, col. 3, lines 1-20 and col. 5, lines 1-33) a trench 518/818 with at least one trench mouth (unnumbered); wherein injecting adhesive into a support substrate trench includes creating a vacuum environment in the support substrate trenches; supplying adhesive 522/822 to the at least one mouth of the first support substrate trenches; in response to returning the support substrate to ambient pressure including supplying an N(2) atmosphere at ambient pressure (as in claim 7), pulling the adhesive into support substrate trenches vacuum environment through the at least one mouth.

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to incorporate the teachings of Pai et al since that would eliminate the formation of air bubbles which affect the performance of the device as taught by Pia et al.

7. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ippel et al. US in view of Wu et al. USPN and Izumi et al. as applied to claim 1 above, and further in view of Matsui et al. USPN 6,191,007.

The combined references do not specifically disclose the steps of forming said support substrate with trenches.

Matsui et al discloses in 107 (see fig. 107 and col. 25, lines 19-31) a support substrate with trenches including forming a rigid support 802 with a top surface; forming a photoresist pattern 807 with openings exposing the underlying support substrate top surface; etching the exposed support substrate top surface to form the trenches 821 in the support substrate; and removing the photoresist.

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to incorporate the teachings of Matsui et al since that would increase uniformity as taught by Matsui et al.

8. Claims 11-15, 18 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ippel et al. US PG-Pub 2002/0031622 in view of Wu et al. USPN 6,545,410 and Izumi et al. USPN 6,104,457.

Ippel et al disclose (see fig. 1 pars. 0003-0005 and bottom portion of par. 0025) a method for mounting a flexible substrate during the fabrication of a liquid crystal display (LCD), the method comprising forming a first rigid support substrate 10 selected from glass or plastic (as in clam 18); distributing a first pattern of spacers 30; forming a first flexible substrate 40 selected from metal or plastic (as in claim 19) overlying the first pattern of spacers; applying adhesive into the first pattern of spacers. But in addition to omitting spacer channels between spacers, they

do not specifically disclose the method of applying or curing said adhesive into the rigid support substrate.

Wu et al disclose in figs. 4 and 5 a first substrate 32 support substrate 34 overlying a second substrate with spacer channels 46/44; and applying adhesive 50 into spacer channels.

Izumi et al. disclose (see fig. 9, col. 9, 5-15 and col. 10, 31-60) injecting adhesive or injecting adhesive in a vacuum environment (as in claim 15) and curing said adhesive to attach top and bottom substrates.

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to incorporate the teachings of Wu et al with the device of Ippel et al since that would improve the reliability and quality of the sealing process as taught by Wu et al. It would have been obvious to incorporate the teaching of Izumi et al with the device of the combined references, since that would harden the bonding material as taught by Izumi et al.

As for claim 12, it would have been obvious to detach the first support substrate and adhesive from the first substrate subsequent to additional LCD fabrication process.

As for claim 13, Izumi et al. disclose (see col. 17, lines 45-59) a plurality of patterned circuit films forming TFTs; liquid crystal (LC) layer; and a color filter.

As for claim 14, it would have been obvious to form said second flexible and rigid substrates and injecting and curing said adhesive, since it has been held that mere duplication of the essential working parts of a process involves only routine skill in the art. St. Regis Paper Co. v. Bemis Co., 193 USPQ 8.

9. Claims 16 and 17, as understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over Ippel et al. US in view of Wu et al. USPN and Izumi et al. as applied to claims 11 and 15 above, and further in view of Pai et al. USPN 6,612,888.

The combined references do not specifically disclose trenches with at least one mouth.

Pai et al disclose (see figs. 5-8, col. 2, lines 63-67, col. 3, lines 1-20 and col. 5, lines 1-33) a trench 518/818 with at least one trench mouth (unnumbered); wherein injecting adhesive into a support substrate trench includes creating a vacuum environment in the support substrate trenches; supplying adhesive 522/822 to the at least one mouth of the first support substrate trenches; in response to returning the support substrate to ambient pressure including supplying an N(2) atmosphere at ambient pressure (as in claim 17), pulling the adhesive into support substrate trenches vacuum environment through the at least one mouth.

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to incorporate the teachings of Pai et al since that would eliminate the formation of air bubbles which affect the performance of the device as taught by Pia et al.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to A. Sefer whose telephone number is (703) 605-1227.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nathan Flynn can be reached on (703) 308-6601.

NATHAN J. FLYNN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800

ANS
October 10, 2003